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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/578,081 | 05/03/2006 | Sverker Hartwig | AC-110 | 4774 |
| 7590 | 04/22/2009 | | EXAMINER | |
| Mark P. Stone 50 Broadway Hawthorne, NY 10532 | | | ANDRISH, SEAN D | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 3672 | |
| | | | MAIL DATE | DELIVERY MODE |
| | | | 04/22/2009 | PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | |
|------------------------------|------------------------|---------------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 10/578,081 | HARTWIG ET AL. |
| | Examiner | Art Unit |
| | SEAN D. ANDRISH | 3672 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 26 January 2009.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1 - 23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1 - 23 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ . |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ . | 6) <input type="checkbox"/> Other: _____ . |

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the drill rod having a varying diameter (see claim 2) must be shown or the feature(s) canceled from the claim(s) because it is not well known in the art to adjust the diameter of a drill rod while drilling and enabling disclosure is required. No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claim 23 is objected to because of the following informalities: The status identifier is incorrect. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1 - 23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- a. Claims 1 and 11:

i. The preamble of claim 1 recites "at least the sub-processes of percussion and/or rotation and flushing." It is unclear whether the claim limitations require at least one of the group consisting of "percussion", "rotation", and "flushing", at least one of a group consisting of "percussion" and "rotation and flushing", or "rotation and flushing".

ii. The claim limitation "at least the percussion power and/or rotational power and the flush power" is indefinite for the same reasons as indicated with respect to the group identified in part i.) as discussed above.

iii. Applicant fails to provide enabling disclosure of how controlling, for example, percussion power controls the total power consumption of each sub-process. Controlling percussion power would have no effect on the control of either rotational power or flush power.

- b. Claims 2 and 12, applicant does not provide adequate disclosure of adjusting the diameter of a drill rod while drilling.
- c. Claims 9 and 19: The claim language does not require the memory of the computer means to store lists including hole depth. Flush power is determined based on stored values and if hole depth is not stored it would be impossible to determine flush power.

Claim Rejections - 35 USC § 102

- 5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

- 6. Claims 1 - 9, 11 - 19, and 21 - 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Hobhouse (3,550,697).

Regarding claims 1, 5, 11, 15, and 21, Hobhouse discloses a means for controlling power consumption during rock drilling comprising: power supply means (electric motor 14); adjusting flush power at least partially as a function of depth by using a controller to adjust speed, torque, and weight-on-bit, and associated required flow of mud-flush, as a function of hole depth (column 2, lines 8 - 14 and 46 - 50; column 4, lines 19 - 23 and 52 - 57). Examiner notes that mud-flush flow is directly proportional to and considered to be equivalent to the power required to pump said mud-flush (column 3, lines 38 - 39). Hobhouse discloses pressure of the mud-flush may be employed to control the weight-on-bit (column 2, lines 22 - 23). Pressure is a function of

depth and increasing hole depth requires a change in flush power to control weight-on-bit and, therefore, flush power is adjusted at least partially as a function of depth.

Regarding claims 2 and 12, Hobhouse further discloses adjusting hydraulic pressure as a function of drill rod diameter (column 4, line 73 - column 5, line 2). The drill rod is used as a safety mechanism to shut down the system power if the system exceeds a predetermined limit on torque, weight-on-bit, or weight/torque combination. Flush power is indirectly adjusted as a function of drill rod diameter because mud flush flow is adjusted as a function of torque and weight-on-bit.

Regarding claims 3, 13, 22, and 23, Hobhouse further discloses maintaining main power supply means at or below a predetermined level (column 4, lines 52 - 57).

Regarding claims 4 and 14, Hobhouse further discloses flow of mud-flush medium is substantially constant (column 2, lines 15 - 20).

Regarding claims 6, 7, 16, and 17, Hobhouse further discloses continuous monitoring of hole depth, drill speed, torque, and mud-flush flow (column 3, lines 6 - 41).

Regarding claims 8 and 18, Hobhouse further discloses computer means (column 3, lines 11 - 14).

Regarding claims 9 and 19, Hobhouse further discloses a memory containing stored data related to hole depth (column 2, lines 47 - 51), the computer means being used to adjust drilling speed, torque, weight-on-bit, and the associated required mud-flush.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 3672

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 10 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hobhouse in view of Larsson et al. (6,681,875). Hobhouse discloses all of the limitations of the above claim(s) except for percussion is performed by a top hammer. Larsson et al. teaches controlling percussive top hammer drilling and flush power (flushing speed) (column 1, lines 24 - 27; column 3, lines 13 – 18) to increase the life of percussive rock tool equipment. It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified the structure as disclosed by Hobhouse with the top hammer as taught by Larsson et al. to increase the life of percussive rock tool equipment.

Response to Arguments

9. Applicant's arguments with respect to claims 1 - 23 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's arguments filed 26 January 2009 have been fully considered but they are not persuasive. Applicant argues that Hobhouse does not teach or suggest flush power is adjusted at least partly as a function of hole depth. Examiner notes that mud-flush flow is directly proportional to and considered to be equivalent to the power required to pump said mud-flush (column 3, lines 38 - 39). Hobhouse discloses pressure of the mud-flush may be employed to control the weight-on-bit (column 2, lines 22 - 23). Pressure is a function of depth and increasing hole depth requires a change in flush power to control weight-on-bit and, therefore, flush power is adjusted at least partially as a function of depth.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SEAN D. ANDRISH whose telephone number is (571)270-3098. The examiner can normally be reached on Mon - Fri, 7:30am - 5:00pm, Alternate Fri off, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Bagnell can be reached on (571) 272-6999. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/William Neuder/
Primary Examiner
Art Unit 3672

SDA
4/7/2009